

math
phys
chem

Calculation of the kinetic isotope effect from experimental data. A. I. Prizskii. *Uchenye Zapiski Kazansk. Univ.* 22: 417 (1952) (Russian). — Math. derivation of the following formulas that are used to calculate the isotopic effect α from the product of the reaction x_1 the fraction of isotopic x_2 in the starting material y_1 in the product y_2 $\alpha = \frac{y_2}{y_1} \frac{x_1}{x_2}$ and the amt. of product produced between x_1 and x_2 . Simplifications resulting if x_1 , x_2 and $y_2 - y_1$ are very small are also given. Zero subscripts signify the value at the beginning of the reaction. $-\alpha = (1 - \alpha) \ln(1 - x) + \ln \left[\frac{(1 - x_1)}{(1 - x_2)} \right]$; $\alpha = \ln(1 - x_2) - \ln \left[\frac{(1 - x_1 - x_2 + y_1)(1 - x_2)}{(1 - x_1 - x_2 + y_2)} \right]$; $\alpha \ln \left[\frac{(1 - x_1)}{(1 - x_2)} \right]$; $z/x_2 = \left[\frac{(1 - x_1)^{1/\alpha}}{(1 - x_2)^{1/\alpha}} - (1 - x_1)^{1/\alpha} \right] (x_1 - x_2)$.

John Howe Scott

phys

Institut fizicheskoy khimii im L. V. Pisarzhevskogo AN USSR.

BRODSKIY, A. I.
 The study of metal corrosion with the aid of the heavy
 oxygen isotopes. I. Moist atmosphere iron corrosion. A. I.
 Brodskii, A. S. Pomenko, and T. M. Abramova (L.V.
 Chernomol' Inst. Phys. Chem. Acad. Sci. Ukr. S.S.R.,
 Kiev). *Zhur. Fiz. Khim.* 30, 878-84 (1956). Fe corrosion
 was studied in O^{18} contg. water, in an atm. contg. the usual
 O . The water was freed from any D which may have been
 present by electrolysis in 20% NaOH, purification of the O
 from entrained H , and combustion with ordinary H , and
 the process repeated. The tests were run with a sample

tion products was tested mass spectrometry
 W. M. Sternberg

of LFH

BRODSKIY, A.I. and MIKLUKHIN, G. P.

"Investigation of the mechanism of sulphur compound reactions and of sulphur isotope exchange," a paper submitted at the International Conference on Radioisotopes in Scientific Research, Paris, 9-20 Sep 57.

BRODSKIY, H. I.

Call Nr: AF 1145611

AUTHOR: Brodskiy, A. I.

TITLE: Chemistry of Isotopes (Khimiya izotopov)

PUB. DATA: Izdatel'stvo Akademii nauk SSSR, Moscow, 2nd ed.,
1957, 595 pp., 7,000 copies

ORIG. AGENCY: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

EDITOR: Katrenko, D. A.

PURPOSE: This is a reference book for chemists, research chemists, teachers, and engineers as well as for specialists in other fields of science and technology, namely, physics, biology, medicine, agricultural chemistry, etc. The author's purpose was to give a brief historical review of the chemistry of isotopes and to bring up to date the development of isotopy by covering Soviet and non-Soviet monographs and

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Call Nr: AF 1145611

Chemistry of Isotopes. (Cont.)

periodicals. Separation and analysis of isotopes and use of isotopes in chemistry, geochemistry, biology, and agriculture are discussed at length.

COVERAGE: The first edition was published in 1952. In the second edition the following chapters were completely revised: Ch. 4, Analysis of Stable Isotopes, pp. 105-143, Ch. 5, Radioactive Isotopes, pp. 144-233, Ch. 7, Isotope Exchange Reactions, pp. 283-353, Ch. 8, Mechanism of Chemical Reactions, pp. 354-424, and Ch. 9, Use of Isotopes in Chemical Analysis, Industry, and Agriculture, pp. 425-490. The use of isotopes in physical chemistry is stressed. The number of references in the second edition (1957) is 1556, 452 of which are USSR.

AVAILABLE: Library of Congress

CARD: 2/2

BRODSKIY, A.I.; VYSOTSKAYA, N.A.

Oxygen exchange in inorganic acids and salts. Probl. kin. i kat. 9:
245-250 '57. (MIRA 11:3)

(Acids) (Salts) (Oxygen--Isotopes)

BRODSKIY, A. I.

Discussion. Probl. kin. i kat. 9:275 '57.
(Catalysis)

(MIRA 11:3)

BRODSKIY, A.I.

Relationship between kinetic isotope effect and change of isotope
content during the course of the reaction. Probl. kin. i kat. 9:
360-362 '57. (MIRA 11:3)

(Chemical reaction, Rate of) (Isotopes)

BRODSKIY, A.I.

ROGINSKIY, S.Z.; BRODSKIY, A.I.; VARSHAVSKIY, Ya.M.

Discussion. Probl. kin. i kat. 9:369-370 '57. (MIRA 11:3)
(Chemical reaction, Rate of) (Isotopes)

BRODSKIY, A.I.; KALINENKO, R.A.; LAVROVSKIY, K.P.

The application of adsorption method of analysis and separation of
hydrocarbon gases during kinetic study using labeled atoms. Probl.
kin. i kat. 9:399-404 '57. (MIRA 11:3)

(Gases--Spectra) (Carbon--Isotopes)

Brodskiy A. I.

20-5-23/54

AUTHOR: Brodskiy, A. I., Corresponding Member of the Academy,
Franchuk, I. F., and Lunenok-Burmakina, V. A.

TITLE: The Study of the Mechanism of the Electrolytic Formation and
Hydrolysis of Persulfates by the Isotopic Method
(Izucheniye mekhanizma elektroliticheskogo obrazovaniya i gidro-
liza persul'fata izotopnym metodom)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 5, pp. 934 - 937
(USSR)

ABSTRACT: Various mechanisms, which had been recommended for the anodic
formation of persulfates by sulfate electrolysis can be classed
into 2 types: 1.) According to the most usual conceptions, per-
sulfate is formed by a direct recombination of the discharging
sulfate- (or bisulfate-) ions. 2.) According to other opinions
water oxidation products (H_2O_2 , OH , OH , surface oxides, etc.)
are formed primarily on the anode or in the electrolytic layer
near the anode, which then oxidize the sulfate by electron or
oxygen atoms. Most of the other mechanisms suggested belong to
one of the two types, differing only with respect to details of

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The Study of the Mechanism of the Electrolytic Formation and Hydrolysis of Persulfates by the Isotopic Method

the intermediate stages. Frumkin and his collaborators proved that in the electrolysis of a K_2SO_4 solution in H_2O^{18} in an acid, neutral, or slightly alkaline medium persulfate oxygen is free from surplus heavy oxygen. This makes it possible to reject all those mechanisms in which the participation of water oxygen in the formation of persulfates is presumed. The authors made use of the heavy oxygen isotope in order to clarify the problem of a possible participation of hydrogen peroxide in the anodic formation of persulfates and for the study of the mechanism of persulfate hydrolysis. It was already known that H_2O_2 and $K_2S_2O_8$ exchange no oxygen with water. Solutions of 40 g $KHSO_4$ were subjected to electrolysis in 200 ml water through a current of 3 A between platinum electrodes at 10 - 15°. Results: 1.) The persulfate yield decreased abruptly if 10 - 20 g/l H_2O_2 was added to the electrolyte. It then increased in accordance with the decrease of the not decomposed remainder of H_2O_2 . The two anode processes H_2O_2 - decomposition and formation of $K_2S_2O_8$ apparently take place independently. The intermediate formation of H_2O_2 is doubted. The independence of the two anode processes is confirmed by the electrolyte experiments of $KHSO_4 + H_2O_2$ in

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H_2O^{18} with an isotopic analysis of the anodic oxygen (table 1). Also the results obtained by these experiments show that the anodic oxidation of H_2O_2 take place without the participation of water-oxygen. 2.) In order to prove definitely that H_2O_2 does not participate in the anodic formation of persulfate, the authors employed the method of isotopic dilution. It may be seen from all results obtained that neither H_2O_2 nor, apparently the OH radicals can be intermediate product of persulfate formation on the anode, because the former recombine quickly in H_2O_2 by exchanging their oxygen with water. 3.) A mixture of 1,3 - 4 g $K_2S_2O_8$ with 1 - 3 g 70% $HClO_4$ or 50% H_2SO_4 was hydrolyzed at 70° by blowing through steam at 30 torr. As seen from table 3, H_2O_2 had the composition of the water if H_2O^{18} was used. Thus, the entire oxygen of the H_2O_2 originates from the persulfate oxygen without the participation of water oxygen. In all cases, also in the case of previous works, it was proved that the peroxide bridge is not interrupted and that water oxygen is not incorporated within the decomposition products of (also other) peroxides. A comparison of the data obtained from the authors

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shows that in the sequence of transformations

$S_2O_8^{--} \rightarrow SO_5^{--} \rightarrow H_2O_2 \rightarrow O_2$ the peroxide group -O-O- goes over from the persulfate, without undergoing separation, into the final product of its decay, i.e. oxygen. In order to eliminate the secondary exchange between HSO_4^- or of the H_2SO_4 produced therefrom and water, $Pb(ClO_4)_2$ was added. This was not fully effective although the exchange became less. This proved that a considerable quantity of O^{18} is introduced into the bisulfate by secondary exchange. This agrees with the scheme mentioned though it still lacks quantitative confirmation. There are 1 figure, 3 tables, and 5 Slavic references.

ASSOCIATION: Institute for Physical Chemistry imeni L.V. Pisarzhevskiy AN Ukrainian SSR (Institut fizicheskoy khimii im. L.V.Pisarzhevskogo Akademii nauk USSR)

SUBMITTED: March 13, 1957

AVAILABLE: Library of Congress

Card 4/4

BRODSKIY, A. I., VYSOTSKAYA, N. A., KUKHTENKO, I. I., MIKLUKHIN, G. P. (Deceased) STRIZAK, L. L., and SULIMA, L. V. (Inst. of Phys. Chem. im. L. V. Pisarzhevskiy, Acad. Sci. Uk. SSR.

"Isotopic Exchange of Oxygen, Nitrogen, and Sulfur in Solutions, and Its Mechanism."
p. 20.

Isotopes and Radiation in Chemistry, Collection of papers of
2nd All-Union Sci. Tech. Conf. on Use of Radioactive and Stable Isotopes and
Radiation in National Economy and Science, Moscow, Izd-vo AN SSSR, 1958, 380pp.

This volume published the reports of the Chemistry Section of the
2nd AU Sci Tech Conf on Use of Radioactive and Stable Isotopes and Radiation
in Science and the National Economy, sponsored by Acad Sci USSR and Main
Admin for Utilization of Atomic Energy under Council of Ministers USSR
Moscow 4-12 Apr 1957.

BRODSKIY, A.I., akademik

Isotopic exchange. Khim.nauka i prom. 4 no.4:423-434 '58.
(MIRA 13:8)

1. Akademiya nauk USSR.
(Isotopes)

AUTHOR: Brodskiy, A. I.

SOV/89-5-1-5/28

TITLE: The Use of Isotopes in the Investigation of the Chemical Structure and of the Reaction Mechanism (Primeneniye izotopov k izucheniyu khimicheskogo stroyeniya i mekhanizma reaktsiy)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 1, pp. 52-63 (USSR)

ABSTRACT: The basic methods employed when using radioactive indicators are given (as described in a paper). The methods employed when investigating the chemical structure, especially of organic substances, and the investigation of the mechanism of chemical reactions are explained. The following methods are described:

- 1.) Using isotopes for the marking of atoms.
- 2.) Investigation of isotope exchange.
- 3.) Use of radioisotopic dilution.
- 4.) Measurement of the kinetic isotope effect.

Each of these methods is illustrated by means of an example taken from the various fields of chemistry; reference is also made to work carried out in the author's laboratory. There are 52 references, 32 of which are Soviet.

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The Use of Isotopes in the Investigation of the
Chemical Structure and of the Reaction Mechanism

SOV/89-5-1-5/28

SUBMITTED: July 22, 1957

1. Radioisotopes--Applications 2. Radiochemistry 3. Chemical
reactions--Analysis 4. Structural analysis

Card 2/2

AUTHORS: Brodskiy, A. I., Vysotskaya, N. A. SOV/76-32-7-12/45

TITLE: The Isotopic Exchange of Oxygen in Acid and Salt Solutions and Its Mechanism (Izotopnyy obmen kisloroda v rastvorakh kislot i soley i yego mekhanizm)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 7, pp.1521-1531 (USSR)

ABSTRACT: From the existing data in publications, in spite of the great amount of information no rule governing the exchange mentioned above can be found, as the investigations were carried out to a great extent only qualitatively and under insufficient conditions. Several assumptions as regards the reaction mechanism are found; among them especially those are worth mentioning according to which the exchange takes place the more easily the greater the ion share of the compound is, i.e., the higher the difference between the electronegativities of oxygen and that atom is to which it is bound. In cases where the exchange took place at measurable rates the kinetics of the process were investigated. L. V. Gulima and A. I. Brodskiy (Ref 15) investigated the reaction mechanism suggested in their earlier publication for this case, and later proved it in a subsequent publication. From the experimental part may be seen that a

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The Isotopic Exchange of Oxygen in Acid and Salt
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number of salts and acids dissolved in water mainly of the elements of the groups V, VI, and VII, with the isotopic composition of the water being determined prior to and after the experiment according to a flotation method described. In some determinations a less precise mass-spectrometric method was employed. The measurements of the exchange kinetics carried out correspond to an ordinary isotopic exchange according to an equation of first order, the ratio k/k_0 being within the range 35-55. From the experimental results obtained may be seen that in the nitrates investigated the exchange velocities depend on the cation and on the acidity of the solution; further measurements with some substances showed the inaccuracy of the data existing in publications. According to the data supplied by Edwards (Ref 30) and Hall and Alexander (Ref 3) it was found that the exchange velocity in the series acid > acid salt > neutral salt drops abruptly; the corresponding examples are given. On the other hand it was found in a comparison of acids and salts with the same central atom that the exchange velocity is reduced sharply by an increase of the number of oxygen atoms (or of sulfur) bound to this central atom. Within the range of the subgroups of the periodic system

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The Isotopic Exchange of Oxygen in Acid and Salt Solutions and Its Mechanism

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table the exchange velocity increases with the increase of the atomic number of the central atom. The rules observed are explained by the mechanism of an intermediate deposition of water to the double bond $X=O$ (or X^+-O^-), with an introduction of the hydrolytic mechanism being possible. The data supplied by S. Z. Roginskiy (Ref 29) are incorrect. There are 2 figures, 5 tables, and 33 references, 12 of which are Soviet.

ASSOCIATION: Akademiya nauk USSR, Institut fizicheskoy khimii im. L. V. Pisarzhevskogo (Institute of Physical Chemistry imeni L. V. Pisarzhevskiy, AS Ukr SSR)

SUBMITTED: March 1, 1957

1. Oxygen--Exchange reactions
2. Exchange reactions--Velocity
3. Hydrogen ion concentration--Chemical effects
4. Salt solutions--Chemical effects

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BRODSKIY, A. I.

AUTHORS: Franchuk, I. F., Brodskiy, A. I., Corresponding Member of the AN USSR. 20-1-36/58

TITLE: The Use of the Isotopic Method in Studying the Mechanism of Electrolytic Formation and Decomposition of Percarbonate, Perborate and Perphosphate (Izucheniye mekhanizma elektroliticheskogo obrazovaniya i razlozheniya perkarbonata, perborata i perfosfata izotopnym metodom).

PERIODICAL: Doklady AN SSSR 1958, Vol. 118, Nr 1, pp. 128-130 (USSR)

ABSTRACT: In the present work the heavy oxygen isotope O^{18} is used for the study of the mechanism of the anodic production, of hydrolysis as well as of the thermal decomposition of percarbonate, perborate and perphosphate. Potassium percarbonate $K_2C_2O_6$ was produced by means of the electrolysis of from 20 to 30 g of K_2CO_3 in 50 milliliters H_2O^{18} with a current of from 1,2 to 2 a between platinum electrodes at a temperature of from -10 to -14° in the cell. The further treatment of the electrolyte samples is shortly shown. The result of such an experiment as well as of the electrolysis of $K_2CO_3^{18}$ are mentioned in a table. The isotope composition of oxygen in CO_2 and in O_2 is similar to the composition in the original carbonate. This

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excludes a participation of water in the production of percarbonate. An electrolytic production of percarbonate with essential yields occurs only in the presence of carbonate. For the purpose of the explanation of the mechanism of this process the authors made a number of analysis of the solutions of $4\text{g Na}_2\text{B}_4\text{O}_7^{18} + 12\text{g Na}_2\text{CO}_3$ in 100 milliliters of H_2O^{18} as well as of the solutions $\text{Na}_2\text{B}_4\text{O}_7 + \text{Na}_2\text{CO}_3^{18}$ in ordinary water at $+10 - 14^\circ$ with a current of from 2-3 a between a platinum anode and a Sn cathode. The results of two such experiments are shown in a table. According to this CO_2 and O_2 of the electrolyte as well as O_2 of the perborate have a similar content of O^{18} which is much smaller than with water. This excludes a participation of water-oxygen in the production of perborate. These and other data show that the primary electrode process is the production of the percarbonate. The perborate obtained by means of the electrolysis is formed through a compound of H_2O_2 . Then the authors report on the electrolytic production of potassium perphosphate

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$K_4P_2O_8$; it obviously is formed after the reaction

$2PO_4^{3-} \rightarrow P_2O_8^{4-} + 2e^-$. With the hydrolysis of percarbonate, perborate and perphosphate the peroxide group $O-O$ moves over to the developing H_2O_2 in undestroyed condition. The thermal decomposition of percarbonate and perborate in H_2O^{18} supplies, as was expected, oxygen of normal isotope composition. There are 1 figure, 3 tables, and 8 references, 1 of which is Slavic.

ASSOCIATION: Institute for Physical Chemistry imeni L. V. Pisarzhevskiy
AN Ukrainian SSR (Institut fizicheskoy khimii imeni L. V.
Pisarzhevskogo Akademii nauk USSR).

SUBMITTED: August 12, 1957

AVAILABLE: Library of Congress

Card 3/3

5(4)

AUTHORS: Brodskiy, A. I., Corresponding Member, SOV/20-123-1-31/56
Academy of Sciences, USSR, Franchuk, V. I., Aleksankin, M. M.,
Lunenok-Burmakina, V. A.

TITLE: Investigation of the Reactions of the Production of Hydrogen Peroxide in the Oxidation of 2-Ethyl Anthrahydroquinone and Isopropanol by the Isotope Method (Issledovaniye reaktsiy obrazovaniya perekisi vodoroda pri okislenii 2-etilantragidrokhinona i izopropanola izotopnym metodom)

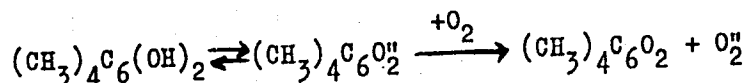
PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 117-119 (USSR)

ABSTRACT: The mechanism of the reactions serving as a basis of the industrial methods of producing hydrogen peroxide by the oxidation of 2-ethylantrahydroquinone (or its derivatives) and of isopropyl alcohol by elementary oxygen has hitherto not been investigated. For the purpose of solving this problem the authors investigated the above-mentioned reactions by means of the isotopic method. 1) The oxidation of 2-ethyl hydroquinone and tetrahydro-2-ethyl antrahydroquinone was carried out under conditions similar to those employed in industry. The results obtained by experiments carried out with a mixture 1 : 1 of the

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aforementioned substances (working mixture) are given in a table. According to the data of this table, the oxygen of the produced hydrogen peroxide originates entirely from the elementary oxygen used for oxidation. The oxygen of the hydroxyl groups of anthrahydroquinone or of alcohol does not take part in the reaction. The mechanism



suggested by R. B. Weissberger (Veysberger) et al. (Ref 2) is hardly probable in the reactions under investigation. Also the intermediate production of transannular peroxides can be excluded. Mechanisms with intermediate production of hydrogen peroxides or radical mechanisms with stripping of a proton from the hydroxyl of the anthrahydroquinone are compatible with the results obtained by the aforementioned experiments. For the purpose of further clarification of the mechanism of the reactions investigated, the authors introduced deuterium into the hydroxyl groups of the 2-ethyl anthrahydroquinone by the

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exchange with methyl alcohol CH_3OD . Carrying out of this reaction is described in short. The hydrogen in the H_2O_2 obtained originates entirely from the hydroxyl groups of the ethyl anthrahydroquinone. According to these data it is possible to exclude also the intermediate production of hydrogen peroxide with addition of the peroxide group into any position (with the exception of 9 or 10). The formation of the hydrogen peroxides in the positions 9 or 10 is not contradictory to the above-discussed observations. By the authors' request V. V. Voyevodskiy, N. N. Bubnov, and N. I. Tikhomirova recorded the spectrum of a solution of 2-ethyl anthrahydroquinone during its oxidation. On this occasion the radical semiquinone was not found. In higher concentrations of a basic medium a distinct spectrum of the radical ion semiquinone was found. Several secondary alcohols are known to oxidize easily by elementary oxygen. In this connection the authors oxidized isopropyl alcohol, in which case the hydrogen peroxide yield amounted to 48%. Also in this case

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the entire oxygen of hydrogen peroxide originates from
elementary oxygen, and the oxygen in the hydroxyl of the
alcohol does not participate. There are 1 table and
6 references.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo Akademii
nauk USSR (Institute for Physical Chemistry imeni
L. V. Pisarzhevskiy of the Academy of Sciences, UkrSSR)

SUBMITTED: June 21, 1958 . .

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SOV/25-59-5-4/56

AUTHOR: Brodskiy, A. I., Academician

TITLE: Isotopes in Chemistry

PERIODICAL: Nauka i zhizn', 1959, No. 5, pp 6-10 (USSR)

ABSTRACT: The author of this article, a well-known Soviet physicist and chemist, Member of the AS Ukrainian SSR, Corresponding Member of the AS USSR, Winner of the Stalin Prize and Director of the Institut fizicheskoy khimii imeni L.V. Pisarzhevskogo (Institute of Physical Chemistry imeni L.V. Pisarzhevskiy) of the AS UkrSSR in Kiyev, explains the nature of isotopes and their fields of application, e.g. with atomic power engineering, as sources of radiation, and their utilization as marked atoms. The author deals in detail with the last item, describing the use of marked atoms with chemical reactions, in analytical chemistry and biochemistry. There are 2 photos and 2 drawings.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo Akademii nauk Ukrainskoy SSR (Institute of Physical Chemistry imeni L.V. Pisarzhevskiy, Ukrainian Academy of Sciences), Kiyev.

Card 1/1

5(4)

AUTHORS:

Strizhak, L. L., Demidenko, S. G., SOV/20-124-5-36/62
Brodskiy, A. I., Corresponding Member, AS USSR

TITLE:

The Isotopic Exchange of Nitrogen Between Aminocompounds and Liquid Ammonia (Izotopnyy obmen azota mezhdru aminosoyedineniyami i zhidkim ammiakom)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, pp 1089-1092 (USSR)

ABSTRACT:

The present paper contains a report about new results obtained by a closer investigation of the kinetics of exchange and its oxygen catalysis. These new data fully agree with the exchange mechanism already previously assumed. The experiments were carried out in thick-walled ampoules made from molybdenum glass and having an inner diameter of 2-3 mm. Experiments are described in short. A table shows the results obtained for acetamine and benzamine. A further table and 2 diagrams show (though less accurately) the results obtained for other substances. Short reference is made to measurements previously carried out. According to exact measurements, liquid ammonia exchanges no nitrogen with the nitro group, with the nitrogen of the pyridine ring and (which is the most essential fact in

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The Isotopic Exchange of Nitrogen Between Amino-compounds and Liquid Ammonia

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the present case) with the amino group if it is immediately connected with the carbon of the aromatic nucleus or alkyl. Exchange in the amino group takes place during the exchange of highly negative substituents (such as the nitro- or sulfo-groups) into the nucleus. Several details are mentioned. A relatively rapid exchange occurs in substances in which the amino group is immediately connected with the highly polarized carbon of the carbonyl groups or with groups analogous to the latter. Exchange is considerably accelerated by the presence of an ammonium ion. All characteristic features of nitrogen exchange in amino-compounds investigated in this paper agree fully with the bimolecular mechanism (SN2) of the nucleophile substitution of the amino group of the substance to the amino-group of ammonia with transfer of the proton from the last-mentioned group to the amino-group to be split off. There are 2 figures, 2 tables, and 5 references, 3 of which are Soviet.

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compounds and Liquid Ammonia

SOV/20-124-5-36/62

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo Akademii
nauk USSR (Institute for Physical Chemistry imeni L. V.
Pisarzhevskiy of the Academy of Sciences, UkrSSR)

SUBMITTED: November 3, 1958

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5.2600(A)

SOV/20-129-6-38/69

~~5(4)~~

AUTHORS: Lunenok-Burmakina, V. A., Brodskiy, A. I., Academician,
AS UkrSSR

TITLE: Investigation of the Mechanism of the Oxidation of Some In-
organic Substances by Persulfate

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1335-1338
(USSR)

ABSTRACT: The authors refer to the various opinions expressed in publica-
tions on the reaction of peroxides (Refs 2-13), among others
to one of their own, which was elaborated in collaboration
with I. F. Franchuk (Ref 1). For the purpose of explaining
what happens in the reaction $K_2S_2O_8 + H_2O_2 \rightarrow 2KHSO_4 + O_2$,
the following three systems differently tagged by O^{18} were
investigated: $K_2S_2O_8^* + H_2O_2 + H_2O$; $K_2S_2O_8 + H_2O_2^* + H_2O$;
 $K_2S_2O_8 + H_2O_2 + H_2O^*$. The liberated oxygen was investigated by
means of spectroscopic analysis as to its O^{18} content. The

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investigation of the O^{18} content of other substances has already been described by reference 1. Table 1 shows that the liberated oxygen has the same isotopic composition as H_2O_2 ,

that the oxygen of bisulfate formed has the composition of persulfate, and that the oxygen of water does not take part in the reaction. The change of the acidity of the medium had no influence on the reaction. Further, the following reactions were investigated: 1) $K_2S_2O_8 + 2AgNO_3 + 2H_2O \rightarrow Ag_2O_2 +$

$+ 2KHSO_4 + 2HNO_3$. Here AgO^* was formed only from H_2O^* , whereas O^{18} contained in $K_2S_2O_8$ passes over completely into the bisulfate. The oxidation of Ag thus takes place according to the electron mechanism without a transfer of oxygen. AgO is no real peroxide. 2) The same result was obtained in the reaction

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SOV/20-129-6-38/69

Investigation of the Mechanism of the Oxidation of Some Inorganic Substances by Persulfate

$\text{MnCl}_2 + \text{K}_2\text{S}_2\text{O}_8 + 3\text{H}_2\text{O} \longrightarrow \text{H}_2\text{MnO}_3 + 2\text{KHSO}_4 + 2\text{HCl}$, and the difference in the binding of the three O-atoms in H_2MnO_3 was confirmed (Ref 18). One of the O-atoms is easily exchangeable so that the formula $\text{MnO}_2 \cdot \text{H}_2\text{O}$ is more correct. 3) The reaction $\text{K}_2\text{S}_2\text{O}_8 + \text{PbS} \longrightarrow \text{PbSO}_4 + \text{K}_2\text{SO}_4 + \text{S}$ was carried out with a solution of not tagged persulfate in water tagged with O^{18} . The oxygen of water did not react. Also in this case the PbS is oxidized by the persulfate according to the electron mechanism. This was confirmed by experiments with PbS which was tagged with S^{35} . The liberated sulfur contained the entire S^{35} , whereas PbSO_4 and K_2SO_4 were not active. Unlike the oxidation with H_2O_2 , that with persulfate was accompanied in all reactions investigated by a separation of the -O-O- bond, and takes place by a transfer of electrons, but not of O-atoms from the oxidizing substance to the substance to be oxidized. The authors

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Investigation of the Mechanism of the Oxidation of Some Inorganic Substances
by Persulfate

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thank A. P. Potemskaya, E. G. Veselaya, and T. A. Vovk for
their collaboration. There are 1 table and 19 references, 5
of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk USSR
(Institute of Physical Chemistry of the Academy of Sciences
of the Ukrainskaya SSR) ✓

SUBMITTED: September 5, 1959

Card 4/4

S/CS1/62/000/001/004/067
B156/B101

AUTHORS: ~~Brodskiy, A. I.~~, Gragerov, I. P., Franchuk, I. F., Sulima, L.V.,
Kukhtenko, I. I., Lunenok, V. A., Pomenko, A. S.,
Aleksankin, M. M.

TITLE: Mechanism of oxidation reactions investigated by the isotopic
method

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 1, 1962, 60, abstract
1B439 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu
atomn. energii, v. 2. Tashkent, AN UzSSR, 1960, 327-334)

TEXT: A review of work done by the authors on studying the mechanism of
certain oxidation reactions using isotopes: the oxidation of organic
compounds with chromyl chloride, the mechanism of anthranil regrouping, the
process of oxidation of aniline, o-anisidine and p-nitroaniline with Caro
acid. The mechanism whereby hydrogen peroxide and certain persulfate-type
inorganic peroxide compounds are formed and converted is examined; so also
are the kinetics of isotopic exchange in substituted benzoic acids,

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Inst. Physical Chem, AS USSR

Mechanism of oxidation reactions ...

S/081/62/000/001/004/067
B156/B101

benzaldehydes, alcohols, naphthalenes and nitro compounds with H_2O^{18} .
18 references. [Abstracter's note: Complete translation.]

Card 2/2

GORDIYENKO, L.L.; BRODSKIY, A.I.

Isotopic exchange of nitrogen in amides of acids. Dokl. AN SSSR
134 no.3:595-598 S '60. (MIRA 13:9)

1. Institut fizicheskoy khimii im. L.V. Pizarzhevskogo Akademii nauk
USSR. 2. Chlen-korrespondent AN SSSR (for Brodskiy).
(Nitrogen-Isotopes) (Amides)

BRODSKIY, A.I.; GOL'DENFEL'D, I.V.

Verifying the accuracy of age determination by the lead-isotope
methods. Biul.Kom.po opr.abs.vozr.geol.form. no.4:98-108 '61.
(MIRA 15:1)

(Geological time)
(Lead-isotopes)

LUNENOK-BURMAKINA, V.A.; POTEMSKAYA, A.P.; BRODSKIY, A.I.

Mechanism of the anodic formation of ozone from sulfuric acid solutions. Dokl. AN SSSR 137 no. 6:1402-1404 Ap '61. (MIRA 14:4)

1. Institut fizicheskoy khimii imeni L.V. Pisarzhevskogo AN USSR.
2. Chlen-korrespondent AN SSSR (for Brodskiy).
(Ozone)

25337

15.2230 (3309, 1413, 3009)

S/020/61/138/006/013/019
B103/B215

21.4100

AUTHORS: Brodskiy, A. I., Corresponding Member AS USSR, and
Franchuk, I. F.

TITLE: Investigation of higher oxides and peroxides of uranium by
the isotope method

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 6, 1961, 1345-1348

TEXT: The authors studied the system U-O below 400°C at a ratio of
O:U=2.67 to 4. So far, this system has only been studied in detail at
higher temperatures and at a ratio of O:U=1:3 in solid phase. The
authors assume the existence of the stoichiometric oxides UO , UO_2 , U_3O_8 ,
and UO_3 . The peroxide $UO_4 \cdot 2H_2O$ from which the peroxide U_2O_7 is obtained
by thermal decomposition has also been known for a long time, although its
structure so far has not been clarified. For their studies the authors
used the radioactive O^{18} which was introduced into various positions of the ini-
tial $UO \cdot 2H_2O$. $UO_4 \cdot 2H_2O$ was then slowly decomposed in vacuo at temperatures

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S/020/61/138/006/013/019

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Investigation of higher oxides and...

up to 700°C. The peroxide $\text{UO}_4^{18} \cdot 2\text{H}_2\text{O}$ containing O^{18} only in the peroxide oxygen was precipitated from a solution of $\text{UO}_2(\text{NO}_3)_2$ in water with heavy H_2O^{18} at room temperature, or by heating up to 90°C. $\text{UO}_4 \cdot x\text{H}_2\text{O}^{18}$ was produced by transforming newly precipitated $\text{UO}_4 \cdot x\text{H}_2\text{O}$ with H_2O^{18} , and dried in vacuo with CaCl_2 . Oxygen was not exchanged between UO_4 and the hydration water. Preliminary experiments were in good agreement with Ref. 3 (C. A. Kraus, Manhattan Project, Report A-281, A-328 (1942); AM-7 (1944)) and Ref. 4 (J. E. Boogs, M. El-Chehabi, J. Am. Chem. Soc., 79, 4258 (1957)). They showed the following results: the formation of the orange-colored compound U_2O_7 by heating $\text{UO}_4 \cdot 2\text{H}_2\text{O}$ gradually up to 195°C. U_2O_7 reacts vigorously with water or H_2SO_4 solutions, oxygen is liberated, and UO_3 , or a uranyl salt is formed, respectively. U_2O_7 is slowly decomposed, oxygen is liberated, and red UO_3 forms by heating between 200 and 400°C. The U_2O_7 content decreased in the solid phase during

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Investigation of higher oxides and...

the decomposition of $\text{UO}_4 \cdot 2\text{H}_2\text{O}$ at 195°C as the oxygen pressure was reduced.

At 15 mm Hg and less it reached 50 %. Higher oxygen pressure also elevated the pressure of water vapor which partly decomposed U_2O_7 .

Oxygen was liberated from H_2O_2 by permanganate during isotope analysis, peroxide oxygen was liberated from U_2O_7 by the action of water, and the oxygen of U_3O_8 was transformed by heating with $\text{HgCl}_2 + \text{Hg}(\text{CN})_2$ in CO_2 .

In water, oxygen was analyzed by a method already described (Ref. 11: A. I. Brodskiy Khimiya izotopov (Chemistry of isotopes) 2-ye izd., Izd. AN SSSR, 1957, p. 117). The oxygen liberated during the stepwise

decomposition of $\text{UO}_4^{18} \cdot 2\text{H}_2\text{O}$ has the same isotope composition as the initial $\text{H}_2\text{O}_2^{18}$ and as the peroxide oxygen obtained from U_2O_7 which escapes by treating the solid phase with acidified water. The O^{18} content in this oxygen is much higher than its average content in the solid phase. Thus, the O atoms in UO_4 and U_2O_7 are not bound in the same way. Peroxide oxygen preserves its structural isolation in these oxides, and is the first

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Investigation of higher oxides and...

to be separated in thermal decomposition. When heating uranium peroxide up to 195°C, 1.9 moles of water per 1 mole of UO_4 are liberated. This water contains 13-24 % of O^{18} of the initial H_2O_2 . From this fact the authors conclude that heavy uranium peroxide does not have the perhydrate structure $UO_3 \cdot H_2O_2^{18} \cdot H_2O$ (contrary to Ref. 8: C. Duval, Anal. Chem. Acta, 3, 337 (1949)). By thermal decomposition of light uranium peroxide prepared in H_2O^{18} , water is formed with an O^{18} content always higher than that of the solid phase. The portion of peroxide oxygen entering water which is separated up to 195°C is the larger, the smaller the U_2O_7 residue not decomposed into a lower oxide. Hence, the authors assume that the absorption of lower amounts of peroxide oxygen by the water is due to the isotope exchange with UO_3 . The authors proved this experimentally. The calculated and determined O^{18} contents confirmed this assumption. Therefore, the authors conclude that uranium tetroxide is a genuine $UO_4 \cdot 2H_2O$ peroxide. Corresponding to this structure, it does not exchange

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Investigation of higher oxides and...

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oxygen with the H_2O_2 solution. The decomposition of U_2O_7 is terminated between 400 and 420°C, and no more oxygen is liberated. The orange-colored solid phase turns red, and does no longer separate oxygen during its interaction with water. Its composition approaches that of UO_3 . The liberation of oxygen again sets in at 450-500°C and lasts until 700-800°C is reached. The solid phase then turns dark-green and its composition approaches that of U_3O_8 . The isotope composition of liberated oxygen does not change between 350 and 700°C, and remains equal also in the final U_3O_8 . The authors assume this to reflect the equivalence of the oxygen atoms in UO_3 and U_3O_8 , which is confirmed radiographically. From the results, they conclude that both $UO_4 \cdot 2H_2O$ and U_2O_7 are genuine peroxides whose atoms of peroxide oxygen are structurally isolated. UO_3 and U_3O_8 , however, have an oxide structure. There are 2 tables and 12 references: 3 Soviet-bloc and 10 non-Soviet-bloc. Two references to English-language publications are given in the body of

Card 5/6

25337

Investigation of higher oxides and...

S/020/61/138/006/013/019
B103/B215

the abstract, the third reads: Ref. 10: M. Anbar, S. Guttman, Intern.
J. Appl. Rad., 5, 233 (1959).

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo
Akademii nauk USSR (Institute of Physical Chemistry imeni
L. V. Pisarzhevskiy of the Academy of Sciences UkrSSR)

SUBMITTED: March 6, 1961

Card 6/6

ROYTER, Vladimir Andreyevich; BRODSKIY, AI., akademik, otv. red.;
POKROVSKAYA, Z.S., red.; DAKHNC, Yu.B., tekhn. red.

[Introduction to the theory of kinetics and catalysis] Vvedenie
v teoriyu kinetiki i kataliza. Kiev, Izd-vo Akad. nauk USSR,
1962. 110 p. (MIRA 16:1)

1. Akademiya nauk Ukr. SSR (for Brodskiy).
(Kinematics) (Catalysis)

BRODSKIY, A.I.; GOL'DENFEL'D, I.V.; GRAGEROV, I.P.

Isotopic analysis of oxygen in water by the persulfate method,
Zhur.anal.khim. 17 no.7:893-895 O '62. (MIRA 15:12)

1. Institute of Physical Chemistry, Academy of Sciences,
Ukrainian S.S.R.

(Oxygen--Isotopes) (Water--Analysis)

BRODSKIY, A.I.; POKHODENKO, V.D.; ALEKSANKIN, M.M.; GRAGEROV, I.P.

Formation and decomposition of cumene hydroperoxide in H_2O^{18} .
Zhur.ob.khim. 32 no.3:758-760 Mr '62. (MIRA 15:3)

1. Institut fizicheskoy khimii imeni L.V.Pisarzhevskogo AN USSR.
(Hydroperoxide) (Oxygen--Isotopes)

BRODSKIY, A.I.; ALEKSANKIN, M.M.; GRAGEROV, I.P.

Mechanism of pyruvic acid oxidation by hydrogen peroxide.

Zhur.ob.khim. 32 no.3:829-833 Mr '62. (MIRA 15:3)

1. Institut fizicheskoy khimii imeni L.V.Pisarzhevskogo AN USSR.
(Pyruvic acid) (Hydrogen peroxide)

BRONSKIY, A.I.; VYSOTSKAYA, N.A.

Mechanism of phenol hydroxylation and anthracene oxidation by
peroxide compounds studied with the aid of O_2^{13} . Zhur.ob.khim.
32 no.7:2273-2278 J1 '62. (MIRA 15:7)

1. Institut fizicheskoy khimii imeni L.V.Pisarzhevskogo AN
Ukrainskoy SSR.
(Phenols) (Hydroxylation) (Anthracene) (Oxidation)

POKHODENKO, V.D.; GANYUK, L.N.; BRODSKIY, A.I.

Rearrangement of the free radical of oxidized ionol. Dokl. AN SSSR
145 no.4:815-817 Ag '62. (MIRA 15:7)

1. Institut fizicheskoy khimii im. L.V. Pisarzhevskogo AN USSR.
2. Chlen-korrespondent AN SSSR (for Brodskiy).
(Cresol) (Radicals (Chemistry))

BRODSKIY, A.I.; POKHODENKO, V.D.; GANYUK, L.N.

Study of the transformations of radicals during the oxidation of
2,6-di-(1,1'-dimethylalkyl)-4-methylphenols. Zhur.strukt.khim.
4 no.2:210-215 Mr-Apr '63. (MIRA 16:5)

1. Institut fizicheskoy khimii imeni L.V.Pisarzhevskogo AN UkrSSR,
Kiyev.

(Phenol) (Oxidation) (Radicals (Chemistry))

BRODSKIY, Aleksandr Il'ich; CHERNYAK, V.S., red.; TIKHONOVA, I.A.,
red.izd-va; KHENOKH, F.M., tekhn. red.

[Using propane and butane in the cutting and welding of
metals] Primenenie propana i butana pri rezke i svarke
metallov. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1963.
110 p. (MIRA 17:2)

S/020/63/148/006/016/023
B117/B186

AUTHORS: Pokhodenko, V. D., Ganyuk, L. N., Yakovleva, Ye. A.,
Shatenshteyn, A. I., Brodskiy, A. I., Corresponding Member
AS USSR

TITLE: E.p.r. spectrum and rearrangement of the radical forming during
the oxidation of ionone-CD₃

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963, 1314 - 1315

TEXT: Experiments with a tagged para-methyl group were made in order to prove the rearrangement of the phenoxy radical (I) in benzyl radical (II) which was observed during the oxidation of 2,6-di-tert-butyl-4-methylphenol (ionone) by means of deuterium tagging. Ionone with deuterium in the methyl group was obtained by hydrogen isotopic exchange with the KND₂ solution in liquid ND₃ under comparatively rigid conditions. Ionone-CD₃ (0.1 M solution in C₆H₆) turns yellow during the oxidation with PbO₂ in vacuo. In the infra-red spectra of the oxidized ionone-CD₃, dissolved in CCl₄, not only the frequencies corresponding to the phenol and the C=O group

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E.p.r. spectrum and rearrangement...

S/020/63/148/006/016/023
B117/B186

(1610 cm^{-1}) were observed, but also a band (2692 cm^{-1}) corresponding to the OD group which confirms the regrouping (I)→(II). The e.p.r. spectrum of the phenoxy radical of ionone- CD_3 was found to consist of 9 lines. Intensity ratio of these lines: 1:4.4:13:23:26:23:13:4.5:1; the splitting between the components is equal and is $a_1 = 1.8\text{ oe}$. This spectrum corresponds to that determined previously for the phenoxy radical of ionone- CH_3

(A. I. Brodskiy, V. D. Pokhodenko, L. N. Ganyuk, Zhurn. strukturn. khim (in press); A. L. Buchachenko, M. B. Neyman, DAN, 139, 916 (1961)). In the case of continuous oxidation it is not changed, as was observed in the spectrum of the phenoxy radical of ionone- CH_3 . After 1.5 hr it passes into a singlet with a width of 2.4 oe. There is 1 figure.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo Akademii nauk USSR (Institute of Physical Chemistry imeni L. V. Pisarzhevskiy of the Academy of Sciences UkrSSR); Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: November 4, 1962

Card 2/2

POKHODENKO, V.D.; GANYUK, L.N.; BRODSKIY, A.I.

Radicals, products of the thermal decomposition of substituted
cyclohexadienone peroxide. Dokl. AN SSSR 149 no.2:321-323 Mr
'63. (MIRA 16:3)

1. Institut. fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR.
2. Chlen-korrespondent AN SSSR (for Brodskiy).
(Cyclohexadienone) (Radicals (Chemistry))

BRODSKIY, A.I.; LUNENOK-BURMAKINA, V.A.

Nature of surface platinum oxides formed during the anode discharge of hydrogen peroxide. Dokl. AN SSSR 151 no.6:1358-1359 Ag '63.
(MIRA 16:10)

1. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR.
2. Chlen-korrespondent AN SSSR (for Brodskiy).

BRODSKIY, A.I.; VSOTSKAYA, N.A.

"Isotopenuntersuchung uber den Mechanismus der Hydroxylierung von Benzol and seinen Derivaten durch Peroxyde"

Report submitted for the COSPAR Fifth International Space Science Symposium, Florence, Italy, 8-20 May 1964.

DEGTYAREV, L.S.; GANYUK, L.N.; GOLUBENKOVA, A.M.; BRODSKIY, A.I.

Electron paramagnetic resonance spectra and the transmission
of the influence of substituents in anion radicals of para-
nitrodiphenyls. Dokl. AN SSSR 157 no.6:1406-1409 Ag '64.
(MIRA 17:9)

1. Institut fizicheskoy khimii im. L.V. Pisarzhevskogo
AN UkrSSSR. 2. Chlen-korrespondent AN SSSR (for Brodskiy).

L 54781-65

EWI(1)/EEC-4/EEED-2/EWA(h)

Pn-4/Pae-2/Peb/Pi-4/Pj-4/Pl-4

IJP(c)

CC

ACCESSION NR: AP5015494

UR/0286/65/000/008/0027/0027
621.317.783.

AUTHOR: Akhiyezer, A. N.; Brodskiy, A. I.

TITLE: Film bolometer for optical transmission lines,
21, No. 170095

Class

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 27

TOPIC TAGS: ^{25B}bolometer, film bolometer

ABSTRACT: The proposed film bolometer for optical transmission lines in the millimeter and submillimeter wavelength ranges is positioned at the focus of a collecting lens. To achieve effective absorption of electromagnetic wave energy, it is designed in the form of a grid made of parallel strips of absorbing material. The grid is placed so that its plane is perpendicular to the direction of wave propagation, while the planes of the individual strips are parallel to the plane of electric-field polarization. Orig. art. has: 1 figure.

[DW]

Card 1/2

L 54781-65

ACCESSION NR: AP5015494

ASSOCIATION: Khar'kovskiy gosudarstvennyy institut mer i izmeritel'-
nykh priborov (Kharkov State Institute of Measures and Measuring
Instruments)

SUBMITTED: 13Apr63

ENCL: 00

SUB CODE: NP, EC

NO REF SOV: 000

OTHER: 000


ATD PRESS: 4028

Card 2/2


BRODSKIY, A. I.

BRODSKIY, A. I.
Congresde Leningrad May-June, 1924; Rev. meta. 22,
206-9 (1925)
B-iron and the specific heats of pure iron.

CA: 19-2471/5


BRODSKIY, A. I.


BRODSKIY, A. I.

CA: 21-3151/2

J. Russ. Met. Soc. 1925, I, 165-73; J. Inst.

Metals 34, 408-9

The specific heats of metals and their melting points.



[REDACTED]

BRODSKIY, A. I.

BRODSKIY, A. I.

CA: 20-2809/9

J. Russian Met. Soc. 1926, No. 1, Sec. L, 7-22

Critical points and heat capacities of pure iron.

[REDACTED]

THEORY AND PROPERTIES OF QUINHYDRONE ELECTRODES. A. I. HUNTSVILLE. *Rev. Ukrain. Khim. Fiz. Inst. phys. Chem.* 2, 66-67 (1929); cf. C. A. 24, 1012. The general theory of the quinhydrone electrodes of different types is discussed. They must be regarded as oxidation-reduction electrodes for which the general equation is: $e = e_0 + (RT/F)Z(1/n)\log [oxid]/[red]$ in which $[oxid]$ and $[red]$ are the concns. of the oxidizing and reducing agents in equil. From this is derived the general equation for all quinhydrone electrodes: $e = e_0 - (RT/F)\mu - (RT/2F)\log[(\Delta_1 + \Delta_2)(\Delta_1 + \Delta_2)] + \nu$, where $\Delta_1 = 1/2[V(\Delta_1 + \Delta_2 + h_1) - 4\Delta_1\Delta_2 + 4h_1\Delta_1 - \Delta_1 - \Delta_2]$. In these equations Δ_1 is the concn. of undissoc. hydroquinone, Δ_2 is the concn. of hydroquinone obtained by the concn. of quinhydrone, e is the concn. of quinone and h_1 is the disocn. const. of hydroquinone. This equation is modified somewhat for satd. solns. and for the special types of electrodes such as the quinhydrone electrode, the quinhydrone hydroquinone electrode, the quinhydrone quinone electrode, and the quinone hydroquinone electrode. H. STOUT

4

Influence of temperature on quinhydrone and calomel electrodes. A. E. BRODSKII AND S. M. BORUKHOVICH. *J. chim. phys.* 26, 842-7; *Ukranskii Khim. Zhur.* 4, Sci. Pt. 379-80(1929).—Cells of the type HgCl (0.1 N KCl) | KNO₃ (satd.) | quinhydrone-Pn were measured at Pn 2.174, 4.155 and 6.145, and at varying temps. For the quinhydrone electrode the relation $d\epsilon/dT = 0.00011 - 0.0001983 \log P_n$ is given and for the calomel electrode $d\epsilon/dT = 0.00000 - 0.0001983 \log C$. For the H₂ electrode $d\epsilon/dT = 0.00000$.

E. G. VANDEN BOSCH

10

Solubility of benzoquinhydrone in the aqueous solutions of ethyl alcohol. M. I. ALPEROV AND A. I. BRODSKII. *Ukrainskii Khim. Zhur.* 4, Sci. 14, 403 4(1929).-- Soly. detns. of benzoquinhydrone at 20° in aq. soln. of EtOH indicated that the soly. of the compd. increases with the increase in the concn. of alc. V. VERNALIOVARY

ASH-SEA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS																		COMMON VARIANTS INDEX																	
MATERIALS INDEX																		PROCESSING AND PROPERTIES INDEX																	
<p><i>B_C</i></p> <p>Electrochemical properties of the ion of mercurous oxide. A. I. BRODARIJ, Russ. Phys. Chem. Soc., 1936, 55, 2505-2515). The activity coefficients of Hg₂⁺ in aqueous solutions of mercurous nitrate at various concentrations have been determined from E.M.F. measurements for the chains Hg Hg₂(NO₃)₂ KNO₃ Hg(NO₃)₂ Cl₂ or Hg Hg. The coefficients found are in good agreement with the values calculated with Debye's second approximation. The factor preceding 1/V in equation 1/VΔE varies less than the theoretical value. The normal potential of the electrode process Hg₂⁺ → 2Hg⁺ is 0.7950 at 10°C., 0.7934 at 14°C., 0.7920 at 18°C., and 0.7900 volt at 25°C., as compared with the normal hydrogen electrode at 25°. Transference of mercurous chloride, bromide, and iodide at 25° are respectively 0.4 × 10⁻³, 0.5 × 10⁻³, and 0.9 × 10⁻³; the solubilities of a number of other sparingly soluble salts of mercury are calculated from the experimental data of other authors, viz. K_{sp} of R. THOMSON.</p>																		<p>a-1</p>																	
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																		EDWIN BOWMAN																	
EDWIN STUBBS																		EDWIN ONE ONLY LIST																	
EDWIN HIP DIV. INC.																		WELLSITE																	
EDWIN S.A.																		EDWIN S.A.																	

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSING AND PROPERTY INDEX																			
<p>Electrolytic production of hydrogen peroxide from sulfuric acid. A. I. DROZDA, A. S. AFANASY AND M. G. DIKOVA. <i>J. Applied Chem.</i> (U.S.S.R.) 5, 725-25 (1952). H₂O₂ may be produced commercially by electrolyzing H₂SO₄ soln. provided the correct product is obtained by redist. No diaphragms are required, and the materials used need not be particularly pure. With a Pt anode and Al cathode, 30-35% H₂SO₄ (conc.), c. d. 200 amp./sq. in. and vol. d. 50 amp./l., the product contained 3-3.5 g. l. of active O. The current efficiency was 55-60%. The temp. was 5-15°. On distn. a pure and stable soln. contg. 1-1.5% H₂O₂ was obtained (85% yield, 50% current efficiency) which could be concd. to 20% or higher with only 0.5-2% loss. However, only about 70% of the concd. product was obtained, the remainder being a 0.5-1% soln. Electrolysis and primary distn. can be made continuous with a 45-50% current efficiency. Possibly further cooling of electrodes and the use of higher c. d. will increase the yield. V. KATCHEVSKY</p>																			
<p>ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>31000 31000000</p>										<p>31000 31000000</p>									
<p>31000 31000000</p>										<p>31000 31000000</p>									

BRODSKIY, Aleksandr Il'ich

"A Modern Theory of Electrolytes," (Sovremennaya teoriya elektrolitov),
Leningrad, 1934.

Bol'shaya Sovetskaya Entsiklopediya, Vol. VI., 2nd ed., Moscow, 1949.

2

The applicability of the theory of Debye and Hückel to non-aqueous solutions. A. I. Rysskii and F. I. Trakhtenberg. *Compt. rend. Acad. Sci. (U. R. S. S.)* [N. S.], 1, 490-1 (in German 492-3) (1934).—The activity coeff. of LiCl in iso-AmOH, found from the distribution coeff. of LiCl between H₂O and iso-AmOH in the range 0.015 M/100 g. of H₂O soln., agrees with the value given by the Debye-Hückel theory. Louis Goldman

COMMON ELEMENTS										COMMON VARIABLES INDEX									
MATERIALS INDEX										PROCESS AND PROPERTIES INDEX									
BC										A-1									
<p>Concentration of heavy water. A. I. BRODSKI, V. A. ALEXANDROVICH, M. M. MATENAJA, and M. K. SCHENKIN (Omsk. inst. Acad. Sci. U.R.S.S., 1964, 3, 615-618).—A process of electrolysis using Fe electrodes with 3-4% KOH or Fe or Pt electrodes with 3-4% H₂SO₄ gave approx. a 5-8-fold concn. of H₂O for a 10-fold vol. reduction. H. J. E.</p>																			
<p>ASH-LEA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M</p>										<p>1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M 1930M</p>									

LIST AND JMC CODES										PRECISES AND PROPERTIES INDEX										100 AND 1000 CODES									
<p>Handwritten: (A)</p> <p>Raman spectra in solution. A. I. Brodskii, A. M. Sack and S. F. Benagil. <i>Physik. Z. Sowjetunion</i> 8, 146-52 (1934).—Solns. of $AsCl_3$ in CCl_4 and C_6H_6, as well as the 3 pure liquids, were studied. The Raman lines of CCl_4 and C_6H_6 are unchanged in the solns., but those of $AsCl_3$ are shifted in harmony with the polar nature of the substance. The max. shift was about 10 cm^{-1}. Some lines were increased in frequency, others decreased.</p> <p>A. B. P. Duncan</p>																													
<p>ASU-SEA METALLURGICAL LITERATURE CLASSIFICATION</p>																													

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
8C										a-1									
<p>Refraction of solutions of electrolytes, and ionic association. A. J. BARNETT, N. S. FILIPPOVA, and G. M. SOUSSOUKOVICH (Coll. Trans. 1st U.S.S.R. Conf. Non-aq. Solutions, Kiev, 1935, 72-79).— Refraction data for 0-0.12N KCl and NaCl support the theory of complete ionization. R.T.</p>																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
1ST ORDER										2ND ORDER									
1ST ORDER										2ND ORDER									

1ST AND 2ND COPIES																									
PROCESSING AND PROPERTY INDEX																									
<p>CA</p> <p>3</p> <p>Raman spectra in solutions. II. Solutions of arsenic trichloride in methyl and ethyl alcohols. A. M. Sack and A. I. Hroolskii, <i>Acta Physicochim. U. R. S. S. S. 2</i>, 215-29 (1935) (in German).--The Raman frequencies of MeOH and EtOH are unchanged by the presence of dissolved AsCl₃ while the frequencies of AsCl₃, 372 and 410 cm.⁻¹, are reduced to approx. 349 and 380 in MeOH and 343 and 388 cm.⁻¹ in EtOH. Other Raman frequencies of AsCl₃ remain unchanged. S. and B. conclude that the alc. dipoles do not strongly deform the AsCl₃ mol. but do considerably change the elastic binding force of the As-Cl bonds. F. H. Rathmann.</p>																									
<p>ASAC-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																									
<p>1ST AND 2ND COPIES</p>																									
<p>1ST AND 2ND COPIES</p>																									

Exchange reactions of hydrogen with deuterium. I. Exchange in carboxyl groups of succinic acid and in hydroxyl groups of hydroquinone. A. I. Rudskii and O. Ch. Sege, *Acta Physicochim. U. R. S. S. 2*, 603 (1935) (in English).—When solns. of succinic acid (I) or of hydroquinone (II) in heavy water contg. 0.8-8.8 moles % D₂O are heated for 2-4 hrs. at 70° in the absence of a catalyst, exchange of the D and H atoms between water and the hydroxyl of I and the carboxyl of II takes place with an exchange coeff. of unity. Reverse exchange of ordinary water with heavy I and heavy II also takes place. Concns. of D in water were detd. by an interferometric, detn. method. II. Exchange in sulfuric acid and sodium hydroxide. Zh. M. Shershever, A. I. Rudskii and M. M. Shukaya. *Ibid.*, 611-14 (in English).—The exchange coeff. of D in heavy water and H in H₂SO₄ (III) and in NaOH (IV) is unity. The reverse exchange coeff. of D in heavy III or heavy IV with H in H₂O is also unity. Crystd. hydrates of Na₂SO₄, PbSO₄, and K₂SO₄ also show exchange coeffs. of unity. F. H. R.

CO

2

Effect of electrolyte on the concentration of heavy water.
A. I. Brodskii and N. P. Skrinikova. *Acta Physicochim. U.S.S.R.* 3:3-7, 1950-10(1955); cf. C. A. 29, 2077¹.—The sepn. factors, detd. by electrolyzing 100 cc. of 0.2 N salt solns. in 0.1% D₂O between Pt electrodes and measuring the concn. of D₂O in the residual liquid (12.5 cc.), increase from 6.0 for KOH through H₂SO₄, KCl, NaCl and K₂CO₃ to 10.6 for Li₂SO₄. B. C. A.

ASAC-5LA METALLURGICAL LITERATURE CLASSIFICATION

104

3

Raman spectra of liquid mixtures. A. J. Hruskal and A. M. Zak. *J. Phys. Chem.* (U. S. S. R.) **6**, 1059 (1935), Cl. C. 1. 29, 5744. The AsCl_3 structure is that calc'd. from electronic data. It changes little in various mixes, but the As-Cl bond is weaker in alc. solns. The moments of inertia around the 2 axes are $I_1 = 7.65 \times 10^{-40}$ and $I_2 = 5.65 \times 10^{-40}$. F. H. Rathmann

ASAC-51A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX	
<p>Concentrating heavy water. A. I. Brodskii, V. A. Aleksandrovich, M. M. Slutskaya and M. K. Shelud'ko. <i>Ber. Inst. phys. Chem. Akad. Wiss. U.S.S.R.</i> 5, 151-4 (in German 155-7) (1960); cf. C. A. 30, 5485. A modification of the Lewis and Macdonald method (C. A. 27, 3934, 4147) was used to ext. 0.2 cc. 99% D₂O from 33 l. H₂O in 6 electrolytic steps, of which the first 2 were performed in alk. medium with Fe electrodes, and 1 with Pb and 3 with Pt electrodes in acid medium. The work is being continued. J. G. Tolpin</p>		2	
<p>ASAC-ELA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>FROM SYNDICATE</p>		<p>RECORDS WITH ONLY ONE</p>	
<p>GROUP #1</p>		<p>GROUP #2</p>	

117 AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

14

Interferometric determination of the refraction of solutions. IV. Complete curves for the refraction of potassium chloride. N. S. Filippova and A. I. Brodskii. *J. Phys. Chem.* (U. S. S. R.) 7, 418-27 (1953); cf. C. A. 30, 4073. Data are given over the concn. range 0.001 N to 4 N. n_D^{20} has a max. of 11.309 between 0.3 and 0.5 N and falls to 11.208 at 0.01 N and 11.235 as $C \rightarrow 0$. The anom. effects are explained on the basis of Debye-Hückel forces. P. H. Rathmann

2

ASR-51A METALLURGICAL LITERATURE CLASSIFICATION

117 AND 2ND ORDERS

117 AND 2ND ORDERS

1st and 2nd Cables 3rd and 4th Cables

COMMON ELEMENTS

COMMON VARIABLE MODE

BC

Q-1

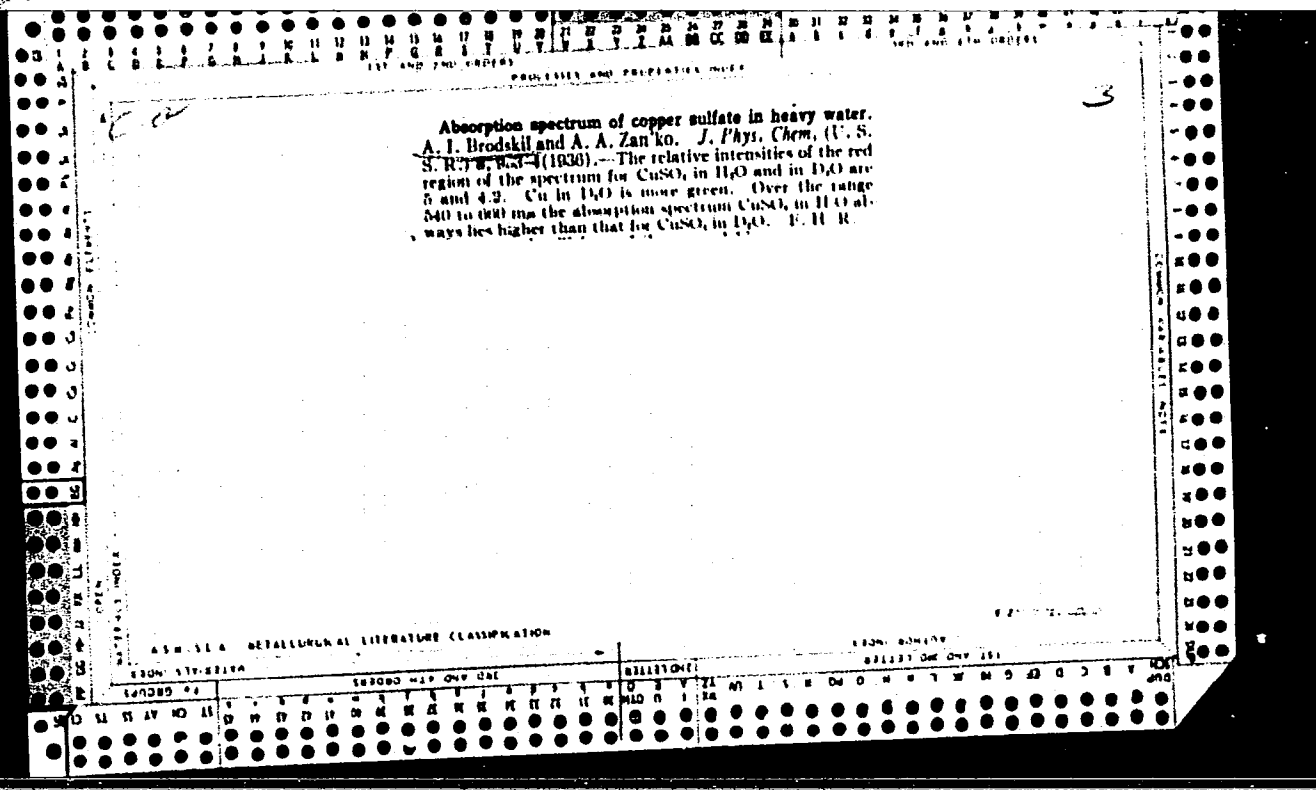
Refraction in solutions. V. Complete re-
fraction curve of carbonic acid. S. M. Sourin-
schikov and A. I. Rozman (J. Phys. Chem. Russ.,
1938, 8, 880-888). α and β have been measured for
concns. up to 4N. The α -conc. curve is similar to
that for electrolytes. J. J. B.

ASH-51A METALLURGICAL LITERATURE CLASSIFICATION

1st and 2nd Cables 3rd and 4th Cables

COMMON ELEMENTS

COMMON VARIABLE MODE



3

Isotope of oxygen. A. I. Brodskii. *Lepkii Akim. O.*
182 77 (1937).—A review on the discovery, analytic detn.,
electrolytic sep., fractional distn. and other methods of
sep., phys. properties, chemistry and the nuclear reac-
tions of O^{18} . F. H. Rathmann.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

ca

Fractionation of oxygen isotopes in the distillation of water. A. L. Rudskii, O. K. Skarre and V. A. Aleksandrovich. *Acta Physicochim.* U. R. S. S. 7, 490 (1937) (in German).— See C. A. 32, 1155^a and following abstr. E. J. C.

3

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

2

Ca

Isotope comparison of snow and mountain water. A. I. Bronskii, O. K. Skarre, R. Donoyev and M. M. Slutskaya. *Acta Physicochim. U. R. S. S. 7, 611-20 (1937) (in German)*. Small cylindrical floats 11 mm. long and 1.5 mm. in diam. were used to det. water d. with an accuracy of 0.2%. Combined with measurements of δ , these showed an impoverishment of D of 0.2-0.3% and an enrichment of 1.3% in ^{18}O in snow water compared to that of the Dnieper River. Caucasus-mountain water showed no difference except as affected by snow melting. Gregg M. Evans

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

Ph

3

Raman spectra in solutions. III. Phosphorous tri-chloride and blamuth chloride in various solvents. A. I. Brodskii and L. Korchagin. *Acta Physicochim.* U. R. S. S. 7, 791-G (1937) (in German).—The Raman shifts of pure PCl_3 are 180, 250, 480 and 511 cm^{-1} ; $\text{PCl}_3 + \text{C}_2\text{H}_6$ (1:1), 180, 258, 485, 510; $\text{PCl}_3 + \text{CS}_2$ (1:1), 180, 257, 485, 510; $\text{PCl}_3 + \text{CHCl}_3$ (1:1), 100, 250, 487, 515. The spectra of the solns. are thus completely additive. The variation of the intensity of the Stokes and anti-Stokes line corresponds to theory. The shifts in HCl in HCl soln. are 110, 236 and 279 cm^{-1} . V. Deitz

A 30 31 A DETAILED QUAL LITERATURE CLASSIFICATION

2

Reaction of the exchange of hydrogen for deuterium.
IV. Equilibrium constants of the exchange reactions in
solution. A. I. Rudskil. J. Phys. Chem. (U. S. S. R.)
9, 785-69 (1937); cf. C. A. 31, 6536¹ and following abstr.
— In the great majority of cases the equil. exchange coeff.
 α ($= (D/H)_{\text{prod}} / (D/H)_{\text{reac}}$) differs from unity only
within the exptl. limits of error. The only marked ex-
ceptions are acetone, 1.2-1.4; NH_4Cl , 0.8; AcH , 2.2
sugar up to 1.2; pyrrole, 0.8; hydroquinone, 1.13. These
are assumed to indicate enolization and other isomeriza-
tions.
P. H. Rathmann

ASB-11A - METALLURGICAL LITERATURE CLASSIFICATION

RECORD NO. 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSES AND PROPERTIES INDEX																			
<p>Fractionation of oxygen isotopes in the distillation of water. A. I. Brodskii, V. A. Aleksandrovich and O. K. Skarv. <i>J. Phys. Chem. (U. S. S. R.)</i> 10, 538 9(1937). By methods similar to those of Lewis (<i>C. A.</i> 27, 4730) and of Trey (<i>C. A.</i> 30, 7000), fractionation of O^{18} and O^{16} was obtained by distn. of water through a 200-cm. const. temp. column with a counter stream of air or CO_2. P. H. Rathmann</p>																			
<p>ASTM-11A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									

1ST AND 2ND ORDER										PROCESSES AND PROPERTIES INDEX									
<p>Activity of solutions of lithium chloride in isoamyl alcohol. F. I. Trakhtenberg and A. I. Brodskii. <i>J. Phys. Chem. (U. S. S. R.)</i> 16, 725-30 (1937).—Data are given on the distribution coeff. for LiCl between water and iso-</p> <p>AmOH at concns. of LiCl in H₂O from 0.0004 up to 0.04 N. Throughout this range, for $t = 25^\circ$, the ratio of the concns. in H₂O and iso-AmOH is $1:311 \pm 12$. It is concluded that in iso-AmOH, LiCl mols. are practically completely dissociated. Interions. Up to 0.03 N the Debye-Hückel formula assuming a radius of 0 Å. gives excellent results, while the Gouy formula with $r = 10$ Å. holds up to 0.04 N, with excellent agreement for the lower concns. in both cases.</p> <p style="text-align: right;">F. H. Rathmann</p>																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION										E-2									

BC

A-2

Examination of snow and of the water
of melting snow. A. I. BOGDAN, G. K. SHARR,
E. I. DODSON, and M. H. SUTHERLAND (J. Phys.
Chem. 1934, 38, 731-736). Measurements of
d and ρ of snow specimens allow the calculation
of the mass of ice in the snow. Snow contains
30-35% D₂O and 1-2% H₂O > the ordinary
water. Measurements of ρ and ρ give different results.
The change of ρ between air and water on Pt is
recorded. J. J. B.

ASS-51A METALLURGICAL LITERATURE CLASSIFICATION

G A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ																									
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50																									
<p>Ca</p> <p>PROPERTIES AND CHARACTERISTICS</p> <p>Raman spectra of liquid mixtures. III. Arsenic trichloride and antimony trichloride in alcohols and carbon disulfide. A. M. Zak and A. I. Brodskii. <i>J. Phys. Chem.</i> (U. S. S. R.) 10, 895 (1957); cf. <i>ibid.</i> 18, 1804; 30, 7330; 32, 4133. Iso-PrOH shifts the frequencies 372 and 410 cm. ⁻¹ of AsCl₃ to 343 and 381; MeOH and EtOH shift ν = 321 and 360 of SbCl₃ to 302 and 340, resp. R. C. P. A.</p>																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>8304 579-02194</p>																									

BRODSKII, Aleksandr Il'ich, 1895

BRODSKII, Aleksandr Il'ich, 1895 Stable isotopes of light elements. Kyiv, Vyd-vo Akademii nauk URSR, 1938 85 p. (50-45809)

QD466.B68

1ST AND 2ND QUARTERS										3RD AND 4TH QUARTERS									
PROCESSES AND PROPERTIES INDEX																			
<div style="text-align: center;">COMMON ELEMENTS</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">COMMON VARIANTS INDEX</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">MATERIALS INDEX</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">OPEN</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">ASD-5LA METALLURGICAL LITERATURE CLASSIFICATION</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">FROM SYNDICATE</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	
<div style="text-align: center;">FROM BOWLEY</div>		<div style="float: left; width: 10%; font-size: 2em;">a</div> <div style="float: right; width: 10%; text-align: right;">2</div> <div style="clear: both;"></div> <p>Refraction of mixtures of urea and potassium bromide in aqueous solution. A. I. Brodskii and M. G. Dikova. <i>Ber. Inst. phys. Chem., Akad. Wiss. Ukr. S. S. R.</i> 8, 187-92 (1966).—The refraction of the mixt. of KBr and urea is equal to the sum of the refractions of solns. of both substances in corresponding concns. Thus loss of the electrolyte does not cause a noticeable deformation of the urra in the urra. A. A. Brodskii</p>																	

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Activity of solutions of lithium chloride in isomyl alcohol. F. I. Trakhtenberg and A. I. Brodskii. <i>Acta Physicochim. U. R. S. S. R.</i> 227-35(1938)(in French). See C. A. 32, 5953. B. J. C.</p>																			
ASB-51A METALLURGICAL LITERATURE CLASSIFICATION										FROM SOURCE									
SOURCE SYNDICATE										COLLECTOR									
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									

1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDERS									
<p>The absorption spectra of copper, cobalt and nickel sulfates in heavy water. A. A. Zait'ko and A. I. Brodskii. <i>Acta Physicochim. U. R. S. S. R.</i> 300-14 (1958) (in English).—The spectral transmissions of solns. of CuSO_4, CoSO_4, and NiSO_4 in H_2O and D_2O were examd. with a spectrophotometer to det. the effect of the solvent on the positions of the bands. No shifts ascribable to the solvent were detected but with D_2O the absorption bands were less intense and were depressed below those with H_2O. C. C. Kiers</p>																													
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
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1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p><i>BC</i> <i>A-1</i></p> <p>Hydrogen-deuterium exchange in acetone. A. J. BRONSKI and M. M. SLUZKAYA (J. Phys. Chem. Russ., 1938, 41, 278-279).—After the exchange the water separated from COMe, by forming Na₂B₄O₇·10H₂O. The coeff. of exchange was 1.21. J. J. B.</p>																																																			
ASM. S. L. A. METALLURGICAL LITERATURE CLASSIFICATION																																																			
SYMBOLS																										SYMBOLS																									
GROUPS																										GROUPS																									